Ordering number: EN 1581D

Monolithic Linear IC



No.1581D

LA7850

CRT Display Synchronization Deflection Circuit

The LA7850 is a sync·deflection circuit IC dedicated to CRT display use. It can be connected to the LA7832,7833,7837.7838 (for vertical output use) to form a sync·deflection circuit that meets every requirement for CRT display use.
So far, ICs for color TV use have been applied to the sync·deflection circuit for CRT display use and general-purpose ICs such as one-shot multivibrator, inverter and a lot of transistors have been used to form the peripherals such as sync input interface, horizontal phase shifter. The LA7850 contains these peripherals on chip and adopts a stable circuit for horizontal oscillation from 15kHz to 100kHz aiming at improving the characteristics required for CRT display use.

Features

- The horizontal oscillation frequency can be adjusted stably from 15kHz to 100kHz.
- The horizontal display can be shifted right/left.
- The horizontal/vertical sync input can be used intact regardless of the difference in pulse polarity and pulse width.
- The AFC feedback sawtooth wave can be obtained by simply applying a flyback pulse to the IC as a trigger pulse.
- Any duty of the horizontal pulse can be set.
- Good vertical linearity because DC bias at vertical output stage is subjected to sampling control within retrace time.

On-chip Functions

[Horizontal Block]
- AFC
- Horizontal OSC
- X-ray protector
- Horizontal phase shift
- AFC sawtooth wave generator
- Horizontal pulse duty setting

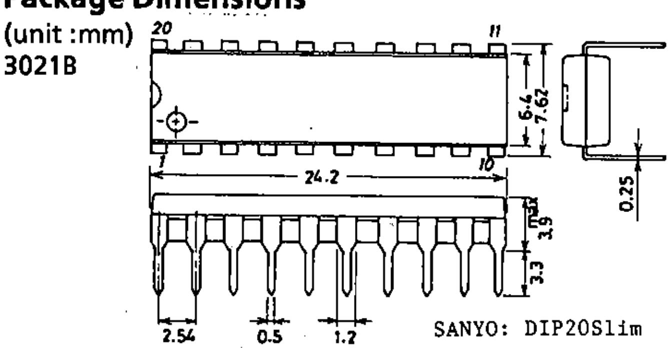
[Vertical Block]
- Vertical OSC
- Vertical sawtooth wave generator
- Sampling type DC voltage control

Maximum Ratings at Ta = 25°C

				unit
Maximum Supply Voltage	V_{10},V_{20} max		14	V
Allowable Power Dissipation	P_d max	Ta≦65°C	780	mW
Operating Temperature	Topr		−20 to +85	°C
Storage Temperature	Tstg		−55 to +125	°C

Package Dimensions

(unit : mm)
3021B



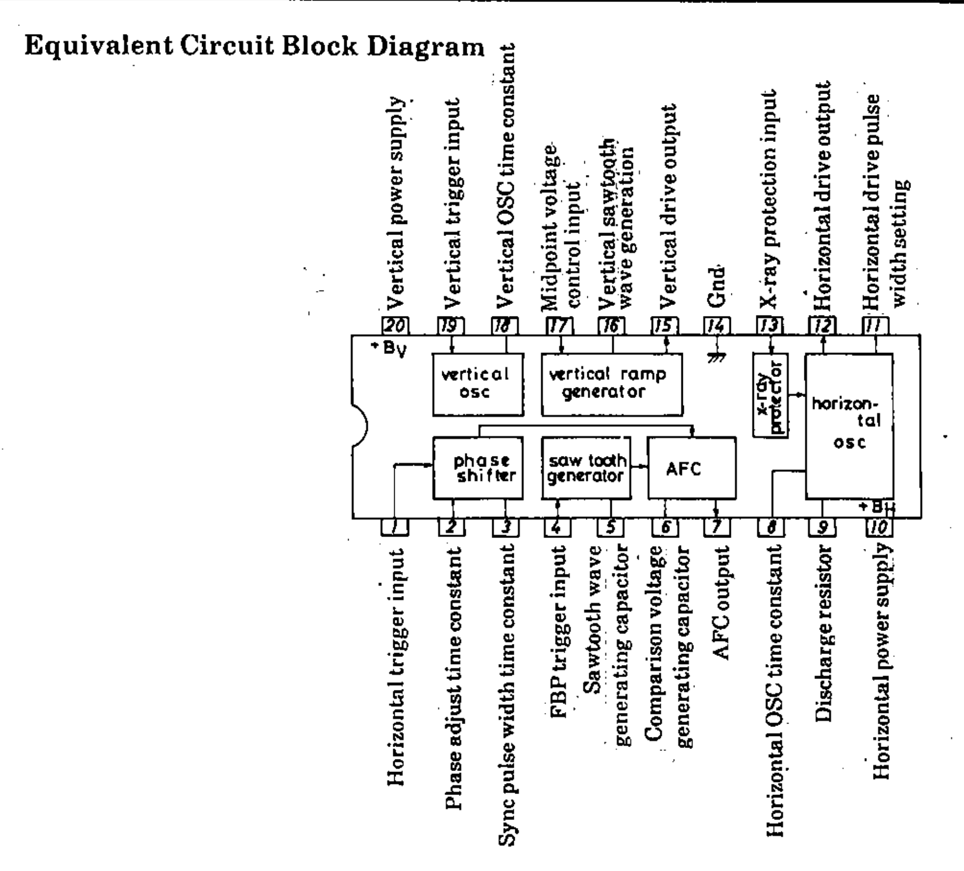
Operating Conditions at Ta=25°C

			unit
Recommended Supply Voltage	V_{10}, V_{20}	12	V
Operating Voltage Range	V_{10}, V_{20}	9 to 13.5	V
Recommended Vertical Pulse Input Peak Value	V_{pulse}	5	Vp-p
Operating Vertical Pulse Input Peak Value Range	V_{pulse}	2 to 6	Vp-p
Recommended Horizontal Pulse Input Peak Value	H_{pulse}	5	Vp-p
Operating Horizontal Pulse Input Peak Value Range	H_{pulse}	2 to 6	Vp-p

Operating Characteristics at Ta=25°C, V_{10}, V_{20}=12V

			min	typ	max	unit
V_{CC10} Current Dissipation	I_{10}		12		30	mA
V_{CC20} Current Dissipation	I_{20}		5		12	mA
Vertical Frequency Pull-in Range	$V_{p\,in}$	Vertical sync 60Hz	10.0		12.0	Hz
Vertical Free-running Frequency	f_v	f_v center 55 Hz	50		60	Hz
Increased/Reduced Voltage Characteristic of Vertical Frequency	Δf_{vv}	V_{20}=12±1V,55Hz at 12V	−0.1		0.1	Hz
Midpoint Control Threshold Level			3.8		4.4	V
Vertical OSC Start Voltage	f_{vst}				4.0	V
Temperature Characteristic of Vertical Frequency		Ta=−10 to +60°C	−0.028		0.028	Hz/°C
Vertical Driver Amplification Factor	G_v		12		18	dB
Horizontal AFC DC Loop Gain	I_{AFC}		±0.85		±1.6	mA
Horizontal Free-running Frequency	f_H	f_H center 15.734kHz	−750		750	Hz
Horizontal OSC Start Voltage	$f_{H\,st}$				4.0	V
Increased/Reduced Voltage Characteristic of Horizontal Frequency	$\Delta f_{H\,v}$	V_{10}=12±1V,15.734kHz at 12V	−50		50	Hz
Horizontal OSC Warm-up Drift	Δf_H	5s. to 30min. after application of power	−50		50	Hz
Temperature Characteristic of Horizontal Frequency		Ta=−10 to +60°C	−2.9		2.9	Hz/°C
Horizontal Output Drive Current	I_{12}		6.0		12.0	mA
Increased/Reduced Voltage Characteristic of Phase Shifter Delay Time		V_{10}=12±1V	−0.5		0.5	%/V
Temperature Characteristic of Phase Shifter Delay Time		Ta=−10 to +60°C	−0.1		0.1	%/°C
Increased/Reduced Voltage Characteristic of Phase Shifter Delay Time		V_{10}=12±1V	−1.0		1.0	%/V
Temperature Characteristic of Phase Shifter Pulse Width		Ta=−10 to +60°C	−0.13		0.13	%/°C
AFC Phase Comparison Center Time		15.734kHz after F.B.P. input	9.9		11.5	μs
Increased/Reduced Voltage Characteristic of AFC Phase Comparison Center Time		V_{10}=12±1V	−1.5		1.5	%/V
Temperature Characteristic of AFC Comparison Center Time		Ta=−10 to +60°C	−0.2		0.2	%/°C
Comparison Waveform Generating Input Operation Voltage	V_4		0.6		0.9	V
Pin 13 Voltage at Hold-down Operation Start	V_{13}		0.5		0.8	V

Equivalent Circuit Block Diagram



Sample Application Circuit: 14 "Color Monitor/f_V = 60Hz, f_H = 15.734kHz

(Note) Co is connected when oscillation occurs in vertical output in Sample Application Circuit.

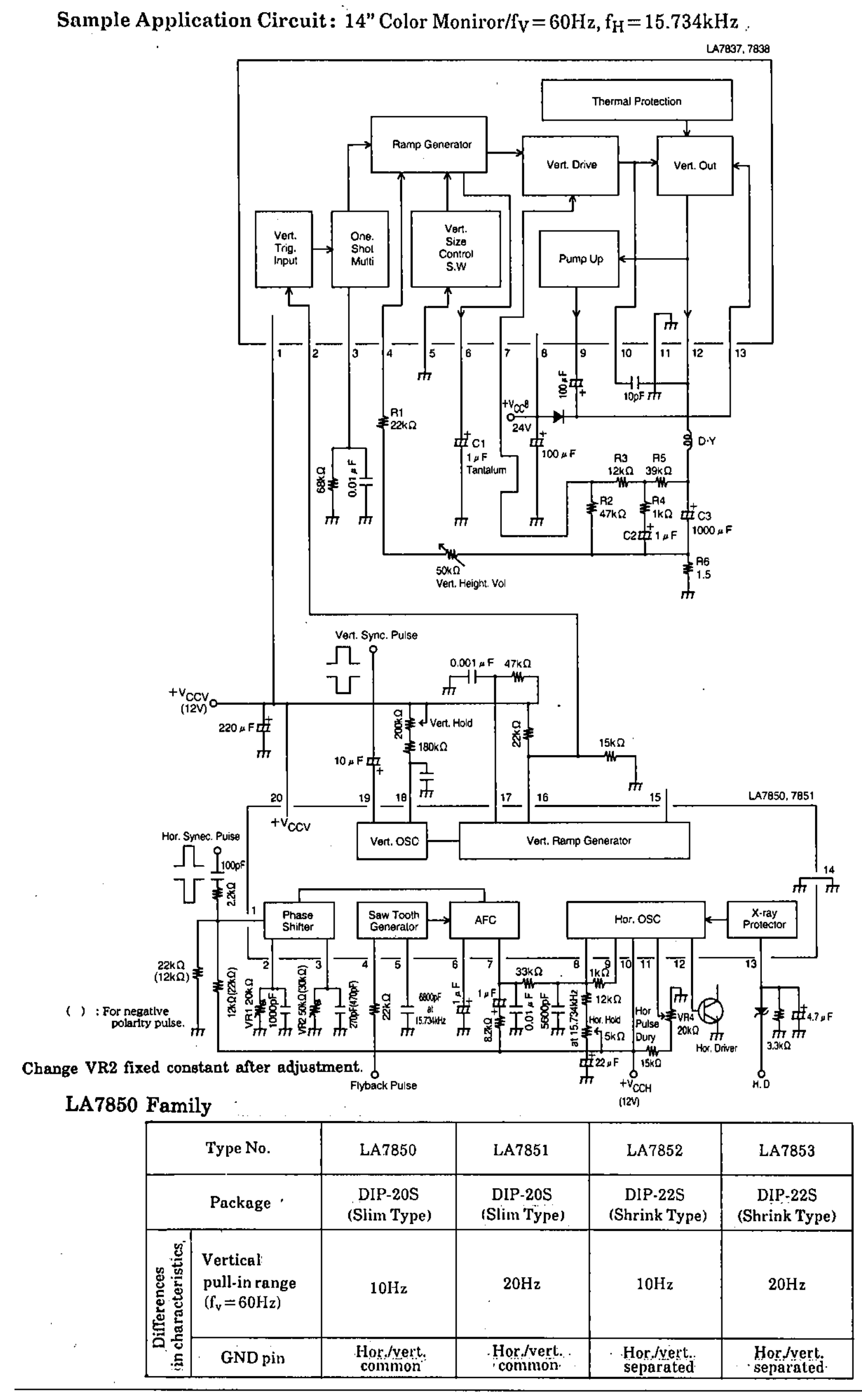
( ): Negative pulse mode

VR2 is fixed after adjustment.

(Note) For the LA7851, the vertical pull-in range is 20Hz at vertical sync 60Hz.

Unit (resistance:Ω, capacitance:F)

Sample Application Circuit: 14" Color Moniror/f_V=60Hz, f_H=15.734kHz



Change VR2 fixed constant after adjustment.

LA7850 Family

	Type No.	LA7850	LA7851	LA7852	LA7853
	Package	DIP-20S (Slim Type)	DIP-20S (Slim Type)	DIP-22S (Shrink Type)	DIP-22S (Shrink Type)
Differences in characteristics	Vertical pull-in range (f_v=60Hz)	10Hz	20Hz	10Hz	20Hz
	GND pin	Hor./vert. common	Hor./vert. common	Hor./vert. separated	Hor./vert. separated

This catalog provides information as of **June , 1996 .** Specifications and information herein are subject to change without notice.